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TITLE: ZN-AL-MG ALLOY PLATING STEEL PIPE AND METHOD OF
MANUFACTURING THE SAME

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INVENTOR-INFORMATION:

NAME	COUNTRY
ASADA, HIROSHI	N/A
ANDO, ATSUSHI	N/A
KOMATSU, ATSUSHI	N/A
SHINODA, KENICHI	N/A
FUJII, MASANOBU	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
NISSHIN STEEL CO LTD	N/A
NISSHIN KOKAN KK	N/A

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ABSTRACT:

PROBLEM TO BE SOLVED: To provide a welded steel pipe preventing brittle cracks of fused metal by reducing stress concentration to an easily cracking weld heat-affected zone, and utilizing high corrosion resistance of a Zn-Al-Mg alloy plated layer.

SOLUTION: The Zn-Al-Mg alloy plated steel pipe is manufactured by molding hot dipped steel plate, in which a Zn-Al-Mg alloy plated layer is formed, the alloy containing 0.05-10 mass % Mg and 4-22 mass % Al, into an open pipe shape, and then welding both cross-direction ends through upset welding. The metal flow angle α ; of a weld part projected outwardly from the circumference of the steel pipe is controlled by the expressions (1) or (2) shown below depending on the Mg content. The Zn-Al-Mg alloy plated layer contains

0.002-0.1 mass % Ti 0.001-0.045 mass % B and 2.0 mass % Si, as needed.
When %
Mg ≤ 3 mass %, $\alpha \leq -8.6 \times \% \text{Mg} + 7 - 5.9 \dots (1)$ When % Mg > 3
mass %, $\alpha \leq 2.9 \times \% \text{Mg} + 41.2 \dots (2)$.

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